NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: Drought Management Plan and Local Drought Monitor

PRIMARY CONTACT INFORMATION

Entity Name: Central Platte Natural Resources District

Contact Name: Lyndon Vogt

Address: 215 Kaufman Avenue, Grand Island, NE

Phone: 308.385.6282

Email: vogt@cpnrd.org

Partners / Co-sponsors, if any: Click here to enter text.

1. **Dollar amounts requested:** (Grant, Loan, or Combination)

   Grant amount requested. $ 60,000

   Loan amount requested. $ N/A

   If Loan, how many years repayment period? N/A

   If Loan, supply a complete year-by-year repayment schedule.
   N/A

2. **Permits Needed - Attach copy for each obtained (N/A = not applicable)**

Nebraska Game & Parks Commission (G&P) consultation on Threatened and Endangered Species and their Habitat	**N/A**☒	Obtained: YES☐	NO☐
Surface Water Right	**N/A**☒	Obtained: YES☐	NO☐

USACE (e.g., 404 Permit)	**N/A**☒	Obtained: YES☐ NO☐
Cultural Resources Evaluation	**N/A**☒	Obtained: YES☐ NO☐
Other (provide explanation below)	**N/A**☒	Obtained: YES☐ NO☐

3. **Are you applying for funding for a combined sewer over-flow project?**

   YES☐ **NO**☒

   If yes, do you have a Long-Term Control Plan that is currently approved by the Nebraska Department of Environmental Quality?

   YES☐ **NO**☒

   If yes attach a copy to your application. N/A

   If yes what is the population served by your project? N/A

   If yes provide a demonstration of need. N/A

   If yes and you were approved for funding in the most recent funding cycle, then resubmit the above information updated annually but you need not complete the remainder of the application.

4. **If you are or are representing an NRD, do you have an Integrated Management Plan in place, or have you initiated one?**

   N/A☐ **YES**☒ NO☐

5. **Has this application previously been submitted for funding assistance from the Water Sustainability Fund and not been funded?**

   YES☐ **NO**☒

   If yes, have any changes been made to the application in comparison to the previously submitted application?

   N/A

   If yes, describe the changes that have been made since the last application.

   N/A

No, I certify the application is a true and exact copy of the previously submitted and scored application. (Signature required)

6. **Complete the following if your project has or will commence prior to next July 1st.**

   As of the date of submittal of this application, what is the Total Net Local Share of Expenses incurred for which you are asking cost share assistance from this fund?

   $0

   Attach all substantiating documentation such as invoices, cancelled checks etc. along with an itemized statement for these expenses.

   N/A

   Estimate the Total Net Local Share of Expenses and a description of each you will incur between the date of submittal of this application and next July 1st for which you are asking cost share assistance from this fund.

   $0

Section B.

DNR DIRECTOR'S FINDINGS

Does your project include physical construction (defined as moving dirt, directing water, physically constructing something, or installing equipment)?

YES☐ **NO☒**

1(a). If yes (structural), submit a feasibility report (to comply with Title 261, CH 2) including engineering and technical data and the following information:

A discussion of the plan of development (004.01 A):

N/A

A description of all field investigations made to substantiate the feasibility report (004.01 B):

N/A

Maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C):

N/A

A description of any necessary water and land rights and pertinent water supply and water quality information, if appropriate (004.01 D):

N/A

A discussion of each component of the final plan including, when applicable (004.01 E):

N/A

Required geologic investigation (004.01 E 1):

N/A

Required hydrologic data (004.01 E 2):

N/A

Design criteria for final design including, but not limited to, soil mechanics, hydraulic, hydrologic, structural, embankments and foundation criteria (004.01 E 3):

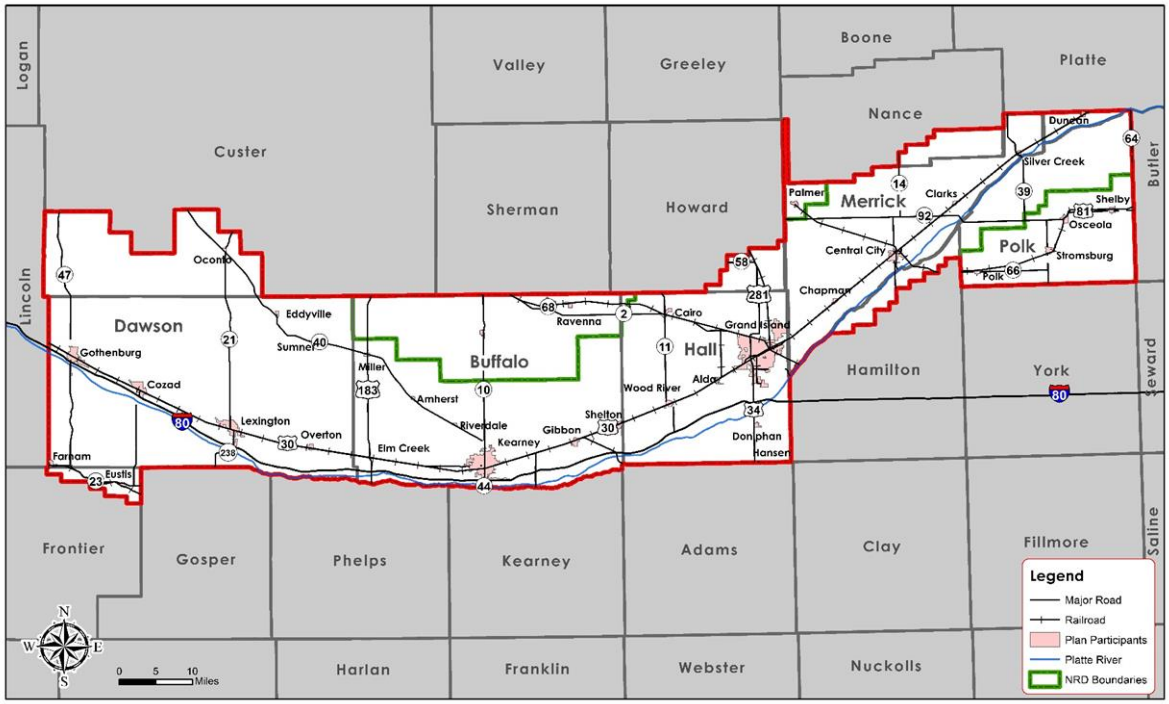
N/A

1(b). If no (non-structural), submit data necessary to establish technical feasibility including, but not limited to the following (004.02):

A discussion of the plan of development (004.02 A):

The Central Platte Natural Resources District (CP NRD) is undertaking an effort to develop a Drought Management Plan and local drought monitor for the District (Figure 1). As the CP NRD provides groundwater management of portions of five counties in central Nebraska, this planning process will refine a collective understanding of drought vulnerabilities, while developing monitoring and forecasting tools that will be linked to specific local triggers. The process will identify and prioritize mitigation efforts and define drought response measures that will be utilized during future drought events. The overarching goal is to develop a sound operational framework and improve critical water supplies throughout the District during periods of drought.

Figure 1: CP NRD Planning Area



These proactive drought planning efforts will be guided by and consistent with the process outlined by the National Drought Mitigation Center (NDMC). The plan will incorporate the following components:

1. Data Collection and Analysis
    a. Collect and review existing planning mechanisms that address drought, water supply, and mitigation
    b. Examine current drought response protocols and monitoring efforts across the District (municipal, agricultural, industrial, etc.)

2. Complete a Vulnerability Assessment
    a. Identify drought frequency, duration, magnitude, and severity
    b. Identify District-specific vulnerabilities (vulnerable populations, critical management periods, past water shortages, etc.)
    c. Examine potential changes to drought frequency and intensity given current climate trends
    d. Develop District maps displaying spatial information

3. Conduct a Regional Drought Tournament
    a. Identify and engage District stakeholders (agricultural producers, municipal water system operators, local industry representatives, governmental (local, regional, state, federal) agencies, etc.)
    b. Develop a multi-year drought scenario
    c. Facilitate a one-day drought tournament soliciting response protocols, monitoring approaches, and future water management needs from District stakeholders

4. Define Drought in Local Terms
    a. Using data collected during the vulnerability assessment, establish local drought definitions that can be tied to drought triggers and specific responses

5. Establish Drought Monitoring Protocol
    a. Identify most appropriate data sources to define drought for the District
    b. Using the U.S. Drought Monitor's levels, define specific measurements for the CP NRD
    c. Develop a drought dashboard that will be on the NRD website and available to District stakeholders

6. Outline Drought Management/Response Measures
    a. Identify triggers, actions, and communications that will be undertaken
    b. Using the local drought definitions, connect drought levels with specific responses (i.e. voluntary restrictions, mandatory restrictions, allocation, etc.)
    c. Develop response progression and communication prompts

7. Develop Drought Mitigation Measures
    a. Establish goals and objectives for the District
    b. Examine/assess current and future capabilities to reduce risk to critical resources
    c. Identify a strategy to address District-specific vulnerabilities and potential partners and funding opportunities

8. Describe Plan Maintenance and Update Processes
    a. Create a schedule for monitoring and evaluation to determine when plan updates will be required

A description of field or research investigations utilized to substantiate the project conception (004.02 B);

The National Drought Mitigation Center (NDMC) has conducted extensive research into best management practices and approaches to planning for future drought events. The NDMC research will directly inform the development of the District-wide Drought Management Plan. The CP NRD has experience in water planning efforts, but this process will be unique in that it will focus on water shortage for multiple sectors and will define drought stages using the best available local data. Potential data sources that will be utilized during the planning process are included in Table 1. The planning process will include the collection of local and regional drought management plans and examine these plans to ensure the CP NRD utilizes the best and most appropriate management approaches.

Table 1: Likely Data Sources

Description of Data	***Sources(s)***	***Data Use***
Ground water elevation	NRD, USGS	Developing drought triggers; analysis of historic drought periods and ground water measurements
Water use records	Municipal water suppliers	Identify use trends and opportunities for improved management
Annual precipitation amounts	NOAA, Standard Precipitation Index (SPI)	Analysis of past and present precipitation trends
Historic drought events	US Drought Monitor, Palmer Drought Severity Index (PDSI)	Used as a part of the vulnerability assessment
Historic loss data	USDA	Establish historic agricultural losses resulting from drought (and drought-related events)
Stream flow records	USGS	Examine stream flow trends to establish surface water monitoring protocols
Population trends	US Census	Examine population trends and potential impacts on water usage
Local/regional drought plans	TBD	Local/regional drought plans from across the United States will be collected and considered; specifically, local/regional drought plans will be examined for best management practices and local drought definitions

A description of the necessary water and/or land rights, if applicable (004.02 C):

Water rights will be considered throughout the planning process. Examining water utilization and allocation during periods of reduced water supply make it critical to both define drought and identify the most appropriate management techniques. In addition, with water rights and downstream use being such large considerations for the District, it is important that those concerns are addressed during the planning process.

A discussion of the anticipated effects, if any, of the project upon the development and/or operation of existing or envisioned structural measures including a brief description of any such measure (004.02 D):

While this project does not include a structural component, the Drought Management Plan will protect existing infrastructure from potential future losses and may suggest recommendations for future water-related infrastructure projects. At this time, municipal water systems can be damaged during periods of drawdown. A goal of the Drought Management Plan will be to identify critical management periods and to establish management protocols to protect water supplies. This plan will focus on the mitigation of future damages, thus guarding against expensive repairs and prolonging the life of existing resources.

2. **Provide evidence that there are no known means of accomplishing the same purpose or purposes more economically, by describing the next best alternative.**

Planning for mitigation and response is the best and least costly approach in addressing drought vulnerabilities. It is well established that there is a limited amount of water available for our use. Therefore, we must plan for shortages and be prepared for the next drought, for we know it is not an “if” question but rather a “when and how severe” question. If a Drought Management Plan is not pursued at the NRD level, it is possible that each individual municipal water system could develop a Drought Management Plan. Ultimately, this would be a costlier approach and could result in a splintered approach with some jurisdictions being more proactive than others. This approach however, will leave a gap related to agricultural water planning. The other alternative would be to do nothing. The CP NRD has operated for years without a formal drought plan and could likely continue to do so, however, this will introduce unnecessary vulnerabilities into the District. Failure to define drought locally and develop a proactive approach to both reduce future losses and stress during drought events may result in significant economic losses as well as a long-term population decline. The CP NRD (and jurisdictions located within the District) are fortunate that a multi-year drought has not occurred, but they are not immune from this hazard. The absence of a Drought Management Plan creates not only economic and social vulnerabilities, but also legal vulnerabilities if management decisions are made during the drought and without sufficient scientific support. A 2006 study completed by FEMA found that for every $1 invested on mitigation we can save society $4.

3. **Document all sources and report all costs and benefit data using current data, (commodity prices, recreation benefit prices, and wildlife prices as prescribed by the Director) using both dollar values and other units of measurement when appropriate (environmental, social, cultural, data improvement, etc.). The period of analysis for economic feasibility studies shall be fifty (50) years or with prior approval of the Director, up to one hundred (100) years [T261 CH 2 (005)].**

   - Describe any relevant cost information including, but not limited to the engineering and inspection costs, capital construction costs, annual operation and maintenance costs, and replacement costs. Cost information shall also include the estimated construction period as well as the estimated project life (005.01).

     The total cost of the project is $100,000. The costs cover project work that will be completed between FY 18 and FY 19. Included in the total budget projection are payments to water resources and drought planning experts to complete the scope of work outlined in this request. Specifically, the costs for the project cover the collection of data, development of the local definition for drought, the establishment of a response protocol, and the identification of specific mitigation alternatives that can be utilized. Further, this financial request will cover the development of a drought monitoring display that will be shared with stakeholders across the District.

   - Only primary tangible benefits may be counted in providing the monetary benefit information and shall be displayed by year for the project life. In a multi-purpose project, estimate benefits for each purpose, by year, for the life of the project. Describe any intangible or secondary benefits separately. In a case where there is no generally accepted method for calculation of primary tangible benefits describe how the project will increase water sustainability, such that the economic feasibility of the project can be approved by the Director and the Commission (005.02).

     The identification of water supply alternatives will help with long-term sustainability goals of the CP NRD. The primary benefits associated with the project are organized for clarity in Table 2. The primary tangible benefits from the Drought Management Plan will be significant. The quality and quantity of recreation along waterways within the CP NRD will increase, municipal water systems will save money through the preservation of existing infrastructure, and water supply security benefits all users (industrial, agricultural, and municipal). It is difficult to monetize these benefits, but the implementation of best management practices will provide a better understanding of both drought-associated losses and potential benefits.

Table 2: Project Benefits

Benefit Category	Benefit	Description
Water Quality	Recreation, Wildfire, Threatened/ Endangered Species	Guarding against low-flows during periods of drought protects water quality and decreases the potential for municipal/private well interference and contamination
Agricultural	Security of Water Supply	Identifying and planning for critical management periods protects agricultural production
Environmental	Wildlife and Threatened/ Endangered Species	Environmental systems benefit from flow protections; native species can prosper and thrive given proper management practices
Societal	Security of Water Supply	Developing the Drought Management Plan will protect both municipal and agricultural water use, an often-challenging task, allowing for both interests to be safeguarded without blame; stabilizing industry and agricultural production should result in population stabilization in rural areas
Achievement of local/regional objectives	Master Plan, Integrated Management Plan (IMP)	Managing water resources is a primary focus for NRD planning; the Drought Management Plan will provide a robust foundation for future decisions and management tools employed by the NRD

- **All benefit and cost data shall be presented in a table form to indicate the annual cash flow for the life of the proposal, not to exceed 100 years (005.03).**

  It is challenging to quantify, in monetary terms, the benefits of a Drought Management Plan. Data regarding historic losses can be taken from the CP NRD regional Hazard Mitigation Plan (HMP). According to the HMP, from 2000 to 2015, more than $72M has been recorded as agricultural losses resulting from drought and drought-related impacts. The goal of the Drought Management Plan will be to detect drought early, allowing for both the CP NRD and District stakeholders to make management decisions that can reduce future losses. With the 2014 University of Nebraska-Lincoln report Understanding and Assessing Climate Change: Implications of Nebraska predicting increases in drought frequency and intensity, “developing a plan to mitigate these events and reduce potential losses is critical.”

- **In the case of projects for which there is no generally accepted method for calculation of primary tangible benefits and if the project will increase water sustainability, the economic feasibility of such proposal shall be demonstrated by such method as the Director and the Commission deem appropriate (005.04).** Click here to enter text.

4. **Provide evidence that sufficient funds are available to complete the proposal.**

   Attachment 3 to this proposal is a budget comparison between the CP NRD Adopted FY 2016/2017 to Proposed FY 2017/2018 budget. Attachment 1 is the CP NRD's letter of financial commitment to the project.

5. **Provide evidence that sufficient annual revenue is available to repay the reimbursable costs and to cover OM&R (operate, maintain, and replace).**

   N/A

6. **If a loan is involved, provide sufficient documentation to prove that the loan can be repaid during the repayment life of the proposal.**

   N/A

7. **Describe how the plan of development minimizes impacts on the natural environment.**

   Due to the environmentally sustainable and resilient nature of this project, the plan of development is likely to provide positive environmental benefits. The focus of the project is to identify District-specific drought vulnerabilities and develop a monitoring system that will increase awareness. These project aims allow stakeholders across the District to make informed decisions regarding water use. Awareness paired with knowledge leads to action. If the plan of development is successful, the result of drought planning is more sustainable flows during periods of drought. This will result in a more stable environment for the threatened and endangered species within the District. The CP NRD is home to many species that are threatened or endangered including, but not limited to: Interior Least Tern, Piping Plover, Whooping Crane, River Otter, American Burying Beetle, and Western Prairie Fringed Orchid. The process will also examine potential mitigation alternatives that could be implemented to reduce drought impacts. If mitigation measures, such as increased surface retention of stormwater run-off and reduced stress on the local ecology, there will be additional benefits for the natural environment. In short, drought management planning will only positively impact the natural environment. These benefits also extend to the social environment. By conducting this process in an open and engaging way, stakeholders from across the District will have an opportunity to better understand other sectors (agricultural, industrial, municipal) and to identify strategies and opportunities to work together to address social and environmental needs.

8. Explain how you are qualified, responsible and legally capable of carrying out the project for which you are seeking funds.

The CP NRD has a wide range of statutory responsibilities and authorities, including, but not limited to, Nebraska Revised Statutes §2-3,201 through 2-3,243 and the Ground Water Management and Protection Act (Nebraska Rev. Statutes §46-701 through46-756). Specifically, Nebraska Rev. Statutes §46-707(f) confer to the NRDs the power to "conduct investigations and cooperate or contract with ...public or private corporations, or any association or individual on any matter relevant to the administration of the [Ground Water Management and Protection] act."

9. Explain how your project considers plans and programs of the state and resources development plans of the political subdivisions of the state.

The Drought Management Plan and local drought monitoring protocol are consistent with, and complementary to, many other local and state plans and programs. The need for the Drought Management Plan and local monitoring protocol is identified in the CP NRD Integrated Management Plan (IMP). The IMP for the CP NRD was developed in partnership with the Nebraska Department of Natural Resources (NDNR) and contains key goals and objectives related to water supply management and sustainability. These goals and objectives are also outlined in the District's Long Range Implementation Plan. Additionally, the Drought Management Plan and local monitoring protocols are consistent with the recently updated Central Platte NRD Regional Multi-Hazard Mitigation Plan (HMP). The regional HMP is a plan that examines risks and vulnerabilities at both the regional (NRD) and local level. The plan outlines strategies that can be utilized to reduce or eliminate future impacts from a range of natural and human-made hazards. During the hazard mitigation planning process, 37 jurisdictions across the District (counties, cities, villages, and school districts) ranked nearly twenty natural and human-made hazards. Based on data collected from NOAA's National Centers for Environmental Information and the USDA's Risk Management Agency, drought was found to be the second most costly hazard. Across the District, drought has resulted in approximately $72.7 million in losses over the last 16 years (primarily agricultural). For this reason, drought was ranked a top concern for both the CP NRD and nearly all of the counties and communities across the District. The following table examines these three plans (Integrated Management Plan, Long Range Implementation Plan, and Hazard Mitigation Plan), and identifies goals and objectives that consistently identify the need for improved drought planning and monitoring.

CP NRD Long Range Implementation Plan, 2016 – 2021		
Focus Area	Goal	Objective
Soil Conservation and Erosion Control	To use each acre within its capability and to treat each acre according to its needs as set forth in the technical guidelines adopted by the District.	To establish approved cultural management practices, vegetative practices, or structural measures, as needed on all lands to prevent wind and water erosion.
		To apply irrigation water management techniques to all of the irrigated land in order to properly conserve and efficiently utilize soil, water, fertility, and energy.
		To develop proper range and pasture use and management plans or programs in order to properly conserve and efficiently utilize those range and pasture areas.
Water Quality	To protect and enhance the quality of surface and groundwater within the District.	To maintain groundwater nitrate levels at or below the permitted levels in areas that are less than 10 ppm.
Water Quantity	To assure an adequate supply of water for feasible and beneficial uses through the proper management, conservation, development and utilization of the District's water resources.	To establish irrigation management practices and techniques on the irrigated lands to properly conserve/efficiently utilize water.
		To develop plans and programs that will strive for a balance between water use and water availability.
		To develop plans and programs that will strive for a balance between the rights of all individuals utilizing the groundwater aquifer.
		To work toward balancing the needs of wildlife with needs of people in utilization of the water resources in the District.
		To balance the needs of endangered and other species on the Platte River and its tributaries with the needs and rights of human users.
Fish and Wildlife Habitat	The conservation and enhancement of fish and wildlife resources for the benefit of the people.	Maintain wetlands for wildlife habitat.
		Consider potential damage to or potential for enhancement of, fish and wildlife habitat in the evaluation of District projects.

Forestry Management	To develop and manage trees/shrubs for the production of raw material for wood products; to reduce wind velocities; to conserve moisture; and to reduce wind erosion for the comfort of the people, livestock and wildlife; and for environmental recreation and aesthetic benefits.	To establish approved cultural management practices, vegetative practices or structural improvements.
Pollution Control and Solid Waste Disposal	To protect and enhance the quality of land, air, surface water and groundwater within the District.	To establish irrigation water management techniques on all irrigated land to properly conserve and efficiently utilize soil, water and fertility.
		To protect and preserve the quality of ground and surface waters that presently meet acceptable standards as adopted by the US Public Health Service and the Nebraska Department of Environmental Quality.
		To improve the quality of groundwater and surface water not presently meeting the standard to such a level as to at least meet water quality criteria contained in the standards.
Information and Education	That the public will develop a connection with natural resources conservation and management through accurate knowledge and understanding of the District's objectives	Establish and implement information and education programs for the public about NRD's duties, responsibilities and objectives.
		Promote communications program designed to enhance the knowledge and understanding of the District's directors and staff about the priorities and expectations of the citizens of the District.

Integrated Water Management Plan, 2009	
Goal	Objective
To secure any future water supply project that are shown to be feasible, beneficial and desirable.	Develop adequate regulations to protect the rights of all legal existing users, ensuring that mandatory requirements will treat parties equitably in both the fully and the over appropriated areas of the District.
To provide for a total consumption of water that does not exceed a fully appropriated status.	Develop rules and regulations, and programs that will strive for a balance between water use and availability.
To maintain for present and future generations the District's water resources while promoting programs that allow economic growth.	Promote water use efficiency when hydrologically and economically beneficial to domestic, agricultural, and industrial water users.
To provide, for present and future generations, an adequate supply of quality water for feasible and beneficial uses.	Promote and support wherever economically feasible, programs that reduce water consumption by invasive species.
To minimize and/or resolve conflicts between water users.	Identify and implement potential incentive programs, education programs, and funding sources (state, federal, other) that help encourage water conservation, reduce consumptive use, meet other management goals and objects, and develop a plan to maximize funding from available sources.
To ensure that the plan complies with the law and with interstate agreements, and to meet basin-wide goals.	

Central Platte NRD Multi-Jurisdictional Hazard Mitigation Plan, 2017	
Goal	Objective
Protect Public Health and Safety from Natural Hazard Events	Improve Warning Systems
	Improve Emergency Communication Systems
	Study/Improve Drinking Water Supply
	Reduce Water Demand/Improve Drought Education

In addition to being consistent with and complementary to regional and local planning mechanisms, the development of a regional Drought Management Plan and monitoring protocol is consistent with the needs and responsibilities identified for NRDs in the Nebraska State Drought Plan (developed in 2000). The following table identifies measures the state considered (in whole or in part) to be under the purview of NRDs for addressing threats posed by drought.

Nebraska's Climate Assessment Response Committee (CARC) Drought Mitigation and Response Plan, 2000		
As identified by the Nebraska Agriculture, Natural Resources, and Wildlife Sub-Committee		
Impact	Planned Actions	Assistance Agencies
Reduced range and pasture forage and livestock water results in poor animal health, soil erosion, and possible economic loss to ranchers	Encourage the use of range and pasture management techniques such as reduced stocking rates, reserve pastures, rotational grazing, removing competitive plants and stored feed to improve sustainability of rangelands under drought conditions.	National Grassland Association, Nebraska Cattlemen, UNL Extension, NRCS, NRDs, Sandhills Cattle Association
	Prior to and during drought, use public information programs and on-site visits to emphasize importance of rangeland management and planning to equalize stocking rates with available forage and the need for permanent water storage and distribution systems.	UNL Extension, NRDs, NEDA, DNR, NRCS, NDMC

	Monitor forage supplies and conditions around the state and facilitate information exchange between interested parties. A) If conditions warrant, a meeting of a forage advisory committee will be organized early in the spring to determine hay stock availability, forage conditions, and wildlife concerns. B) Also, at that meeting, the procedure for emergency roadside haying through the Department of Roads could be discussed to determine need and value of this procedure. C) Also, at that meeting, it could be determined if a letter to the federal office of FSA is warranted to forewarn them of drought conditions and impending requests for CRP emergency release; this group would pass that recommendation on to CARC, who would then pass the request for the letter on to the Governor and the Director of Agriculture.	UNL Extension, NRDs, NEDA, NRCS, DNR, NDMC, FSA, Nebraska Cattlemen, Farm Bureau, Alfalfa Association, Nebraska Department of Roads
	Assist ranchers in obtaining supplemental income by connecting them with employment opportunities, and during drought, by holding job fairs and raising general awareness of job opportunities and ranchers' work skills.	Nebraska Department of Labor, NEDA, UNL Extension, NRDs, Center for Rural Development
	Establish and activate a statewide and nationwide hotline system for locating economical feedstock sources.	NEDA, UNL Extension, Nebraska Cattlemen, National Guard, Farm Bureau, NEMA, NRDs, NRC S, Alfalfa Association
Reduced soil moisture on dry cropland poses economic loss to farmers and possible	Use public information programs to emphasize installation of soil and water conservation systems (i.e., terraces, crop residue use, and contour planting).	NRCS, SARE, DEQ, UNL Extension, NRDs

increase d soil erosion and blowing dust	Emphasize additional measures regarding crop residue management, grassing terraces and emergency tillage to control soil blowing.	NRCS, SARE, DEQ, UNL Extension, NRDs
	Investigate use of rainfall enhancement projects in targeted areas.	NEDA, DNR, NRDs
Decreased irrigation water from surface water sources prevents achievement of crop harvest potential	Emphasize adjustment of irrigated acre age to meet expected water availability.	DNR, NRDs, NRCS, Irrigation Districts, UNL Extension, USBR
	Develop a funded loan program to encourage installation of on-farm water conservation measures.	USBR, DNR, DEQ, NRDs
Increased irrigation pumping from underground water sources may lower water levels and decrease pumping rates resulting in less capacity to meet crop needs and decreasing the profitability of an irrigated cropping system	Continue to emphasize irrigation water management techniques and develop emergency loan program to promote installation of on-farm water conservation measures.	NRDs, USBR, DEQ, NRCS, UNL Extension, FSA, NEDA
	Maintain water-level measurement program to monitor declining aquifer levels.	NRDs, UNL CSD
	Maintain ground water metering efforts and establish an emergency allocation program.	NRDs
Loss of farmers and ranchers due to drought-induced bankruptcy	Encourage continuation of federal emergency indemnity plans for crop and livestock agriculture.	NEDA, FSA, NRDs
Increased health problems for residents of areas experiencing problems from blowing dust (Also included within the Municipal Water Supply, Health, and Energy Subcommittee plan)	Communicate with state medical allergy and asthma experts to develop recommendations.	UNMC, UNL Extension, NRDs, NRC S, local health offices, environmental health fund, NEMA, HHS
	Establish education programs to increase awareness of dust-related respiratory problems and how proper land management can improve air quality.	
	Develop funded initiatives to explore mitigation of health effects.	

As identified by the Nebraska Municipal Water Supply, Health, and Energy Sub-Committee		
Impact	Planned Actions	Assistance Agencies
Due to drought, many public water supply systems experience potable water demand problems.	Emphasize, and evaluate, long and short-term drought contingency plans for all systems.	NHHS, League of Municipalities, NRDs, Nebraska Rural Water Association, NDEQ, AWWA, CED/UNL.
	Emphasize indoor and outdoor water conservation measures.	
	Maintain list of "problem systems", with history or potential for drought-related problems.	
	Develop programs and educate the public on the potential uses of wastewater.	
	Develop partnerships with utility companies and others who can help distribute drought-related information.	
Many rural water districts and small public water systems (under 10,000 population) develop operational (mechanical) problems when operating for extended periods of drought.	Maintain list of "problem systems" with history or potential for drought-related problems.	NRWD, NEMA, Nebraska Section of AWWA, Nebraska Department of Economic Development (NDED), USDA Rural Development, League of Municipalities, NHHS, Midwest Assistance Program, NDEQ, UNL Extension, NRDs, Groundwater Foundation, Nebraska Department of Natural Resources, Nebraska Rural Water Association (NeRWA), EPA.
	Continue work with systems to develop a plan of long-term drought mitigation and short-term drought response actions.	
	Maintain communication means and use NeRWA newsletter and training sessions to address drought-related issues.	
	Explore, as needed, emergency funds.	
Due to drought, private wells experience water quality and quantity problems.	Encourage NRDs to evaluate situation.	NRDs, CSD/UNL, CED/UNL
	Emphasize indoor and outdoor water conservation measures.	
Increased irrigation may overdraft available aquifer and affect municipal and rural water supplies during drought.	Promote groundwater-metering efforts and establish an emergency allocation program.	NRDs, Bureau of reclamation, DOE, CSD/UNL, CED/UNL, USGS.
	Encourage statewide water level measurement program to effectively monitor aquifer levels.	

Increased presence of large, industrial, independent water users may overdraft available aquifers during drought.	Maintain a list of large, industrial, independent water users	NRDs, NDED, CSD/UNL, Nebraska Department of Natural Resources, League of Municipalities, CED/UNL.
	Enhance communication between large, independent water users and municipal suppliers to implement water conservation and drought-preparedness guidelines.	
Increased health problems for residents of areas experiencing blowing dust problems from drought affected agricultural lands.	Communicate with state medical allergy and asthma experts to develop recommendations.	NHHS, UNMC, CED/UNL, NRDs, NRCS, Nebraska Emergency Management Agency (NEMA), local health offices, environmental health fund.
	Establish education programs to increase awareness of dust related respiratory problems and how soil and land conservation practices can improve air quality.	
	Develop funded initiatives to explore mitigation of health effects.	

10. Are land rights necessary to complete your project?

YES☐ **NO☒**

If yes, provide a complete listing of all lands involved in the project.

N/A

If yes, attach proof of ownership for each easements, rights-of-way and fee title currently held.

N/A

If yes, provide assurance that you can hold or can acquire title to all lands not currently held.

N/A

11. Identify how you possess all necessary authority to undertake or participate in the project.

The CP NRD has a wide range of statutory responsibilities and authorities, including but not limited to Nebraska Revised Statutes §2-3,201 through 2-3,243 and the Ground Water Management and Protection Act (Nebraska Rev. Statutes §46-701 through 46-756). Specifically, Nebraska Rev. Statutes §46-707(f) confer to the NRDs the power to "conduct investigations and cooperate or contract with ... public or private corporations, or any association or individual on any matter relevant to the administration of the [Ground Water Management and Protection] act."

12. Identify the probable environmental and ecological consequences that may result as the result of the project.

Only positive environmental and ecological impacts are expected to result from this project. The goal of drought planning is to achieve a more sustainable balance in water use, particularly during periods of drought. The Drought Management Plan will define drought levels, establish monitoring protocols, and identify specific actions to take at each drought stage. This will allow for better management of water resources during periods of shortage. The result should be more stable river flows across the CP NRD during periods of drought, improving river health, and protecting habitat of the endangered and threatened species located across the District. The CP NRD is home to a wide range of endangered and threatened species including, but not limited to: Interior Least Tern, Piping Plover, Whooping Crane, River Otter, American Burying Beetle, and Western Prairie Fringed Orchid.

Section C.

NRC SCORING

In the NRC's scoring process, points will be given to each project in ranking the projects, with the total number of points determining the final project ranking list.

The following 15 criteria constitute the items for which points will be assigned. Point assignments will be 0, 2, 4, or 6 for items 1 through 8; and 0, 1, 2, or 3 for items 9 through 15. Two additional points will be awarded to projects which address issues determined by the NRC to be the result of a federal mandate.

Notes:

- The responses to one criterion *will not* be considered in the scoring of other criteria. Repeat references as needed to support documentation in each criterion as appropriate. The 15 categories are specified by statute and will be used to create scoring matrixes which will ultimately determine which projects receive funding.

- There is a total of 69 possible points, plus two bonus points. The potential number of points awarded for each criteria are noted in parenthesis. Once points are assigned, they will be added to determine a final score. The scores will determine ranking.

- The Commission recommends providing the requested information and the requests are not intended to limit the information an applicant may provide. An applicant should include additional information that is believed will assist the Commission in understanding a proposal so that it can be awarded the points to which it is entitled.

Complete any of the following (15) criteria which apply to your project. Your response will be reviewed and scored by the NRC. Place an N/A (not applicable) in any that do not apply, an N/A will automatically be placed in any response fields left blank.

1. **Remediates or mitigates threats to drinking water;**

- **Describe the specific threats to drinking water the project will address.**
- **Identify whose drinking water, how many people are affected, how will project remediate or mitigate.**
- **Provide a history of issues and tried solutions.**
- **Provide detail regarding long range impacts if issues are not resolved.**

The specific threats to drinking water this project will address include both water shortages and water quality issues during periods of drought or low-flow conditions. The Drought Management Plan will enable the CP NRD to shape water allocations and water controls (specific to ground water supplies) to promote sustainable water use. When drought is defined in local terms and its development is actively monitored, the CP NRD and District stakeholders are enabled to make informed decisions. This approach positions the District not as crisis responders, but as risk managers, as outlined and recommended by research and publications provided by the National Drought Mitigation Center. Drought conditions can result in significant declines in ground water elevations and streamflow, as well as presenting the potential to impact water quality.

Within the CP NRD there are 37 municipal water systems providing drinking water to an estimated population of 115,173. These municipal water systems rely almost exclusively on ground water supplies to meet their needs. The systems range in population served from 25 to nearly 50,000. While these entities are required by Nebraska DHHS to have a Contingency/Emergency Response Plan in place, most of these documents fail. They do not define drought and lack decisive action related to proactive management practices that will sustain water supplies during periods of drought. The CP NRD is in a unique position to act by defining drought across the District and utilizing best drought management practices. Engaging stakeholders from various sectors during the drought tournament will be a significant first step in sharing information and collecting data regarding current District-wide planning efforts and how they might be strengthened.

Currently, the CP NRD is participating in a 3-year Vadose Zone Nitrate Study to examine ways to improve water quality. The CP NRD also completes an annual review of ground water management protocols, but these efforts are limited in their ability to address drought-specific issues. The Drought Management Plan will complement and bolster existing and ongoing planning efforts.

The development of the Drought Management Plan is aimed at reducing long-term impacts from drought events. If drought planning does not occur, there is a real threat that water resources during drought events could be exhausted. This may result in dangerous District-wide impacts to all residents.

2. **Meets the goals and objectives of an approved integrated management plan or ground water management plan;**

   - **Identify the specific plan that is being referenced including date, who issued it and whether it is an IMP or GW management plan.**
   - **Provide the history of work completed to achieve the goals of this plan.**
   - **List which goals and objectives of the management plan the project provides benefits for and how the project provides those benefits.**

   The Drought Management Plan and local monitoring protocol is consistent with and complementary to multiple NRD plans. The following table identifies planning consistencies and projects that have been, or are being, implemented to help accomplish the plan goals related to drought planning.

	Focus Area	Goal	Objective
CP NRD Mater Plan 2011 - 2021	Soil Conservation and Erosion Control	To use each acre within its capability and to treat each acre according to its needs as set forth in the technical guidelines adopted by the District.	To establish approved cultural management practices, vegetative practices or structural measures, as needed on all lands to prevent wind and water erosion.
			To apply irrigation water management techniques to all the irrigated land to properly conserve and efficiently utilize soil, water, fertility and energy.
			To develop proper range and pasture use and management plans or programs to properly conserve and efficiently utilize those range and pasture areas.
	Water Quality	To protect and enhance the quality of surface and groundwater within the District.	To maintain groundwater nitrate levels at or below the permitted levels in areas that are less than 10 ppm.
	Water Quantity	To assure an adequate supply of water for feasible and beneficial uses, through the proper management, conservation, development and utilization of the District's water resources.	To establish irrigation management practices and techniques on the irrigated lands in order to properly conserve and efficiently utilize the water.
			To develop plans and programs that will strive for a balance between water use and water availability.
			To develop plans and programs that will strive for a balance between the rights of all individuals utilizing the groundwater aquifer.
			To work toward balancing the needs of wildlife with needs of people in utilization of the water resources in the District.
			To balance the needs of endangered and other species on the Platte River and its tributaries with the needs and rights of human users.
	Fish and Wildlife Habitat	The conservation and enhancement of fish and wildlife resources for the benefit of the people.	Maintain wetlands for wildlife habitat.
			Consider potential damage to or potential for enhancement of, fish and wildlife habitat in the evaluation of District projects.

	Forestry Management	To develop and manage trees/shrubs for the production of raw material for wood products; to reduce wind velocities; to conserve moisture; and to reduce wind erosion for the comfort of the people, livestock and wildlife; and for environmental recreation and aesthetic benefits.	To establish approved cultural management practices, vegetative practices or structural improvements.
	Pollution Control and Solid Waste Disposal	To protect and enhance the quality of land, air, surface water and groundwater within the District.	To establish irrigation water management techniques on all irrigated land to properly conserve and efficiently utilize soil, water and fertility.
			To protect and preserve the quality of ground and surface waters that presently meet acceptable standards as adopted by the US Public Health Service and the Nebraska Department of Environmental Quality.
			To improve the quality of groundwater and surface water not presently meeting the standard to such a level as to at least meet water quality criteria contained in the standards.
	Information and Education	That the public will develop a connection with natural resources conservation and management through accurate knowledge and understanding of the District's objectives.	Establish and implement information and education programs for the public about NRD's duties, responsibilities and objectives.
			Promote communications program designed to enhance the knowledge and understanding of the District's directors and staff about the priorities and expectations of the citizens of the District.
			Study/Improve drinking water supply.
			Reduce water demand/improve drought education.

	Goal	Objective
Integrated Water Management Plan, 2009	To secure any future water supply project that are shown to be feasible, beneficial and desirable.	Develop adequate regulations to protect the rights of all legal existing users, ensuring that mandatory requirements will treat parties equitably in both the fully and the over appropriated areas of the District.
	To provide for a total consumption of water that does not exceed a fully appropriated status.	Develop rules and regulations, and programs that will strive for a balance between water use and availability.
	To maintain for present and future generations the District's water resources while promoting programs that allow economic growth.	Promote water use efficiency when hydrologically and economically beneficial to domestic, agricultural, and industrial water users.
	To provide, for present and future generations, an adequate supply of quality water for feasible and beneficial uses.	Promote and support wherever economically feasible, programs that reduce water consumption by invasive species.
	To minimize and/or resolve conflicts between water users.	Identify and implement potential incentive programs, education programs, and funding sources (state, federal, other) that help encourage water conservation, reduce consumptive use, meet other management goals and objects, and develop a plan to maximize funding from available sources.
	To ensure that the plan complies with the law and with interstate agreements, and to meet basin-wide goals.	

Central Platte NRD Multi-Jurisdictional Hazard Mitigation Plan, 2017	
Goal	Objective
Protect Public Health and Safety from Natural Hazard Events	Improve Warning Systems
	Improve Emergency Communication Systems

CP NRD Completed Projects	
Annual review and update of Groundwater Management Plan	In 2017 the CP NRD is proposing to update water regulations. The changes to the rules and regulations maintain consistency between the local and state regulations.
Annual groundwater monitoring	Currently the CP NRD collects groundwater measurements two times annually. The measurements are taken in all 11 counties served by the NRD to monitor the District's groundwater levels.
Platte River Recovery Implantation Program	CP NRD participates in the Platte River Recovery Implementation Program (PRRIP) with the states of Nebraska, Colorado, Wyoming and the Department of Interior to find a solution for endangered species in the Central Platte Basin; as well as water rights for the landowners/operators in the District. PRRIP was developed by the federal government along with the basin states of Nebraska, Colorado and Wyoming and signed in 2006. Local, state and federal government agencies are working with groups from throughout the basin to build a framework for a long-term Program that will satisfy Endangered Species Act (ESA) requirements for water users in the basin.
Groundwater Exchange Program	The Groundwater Exchange Rules & Regulations was updated in September 2016 to expand the Program to include the Loup Basin within the District and add definition of terms.
Vadose Zone Nitrate Study	As part of this three-year vadose zone study, approximately 27 sites collected across the CP NRD between 1990 and 1996 have been digitized and are being used to compare recent profiles at these sites to determine how fast nitrate is moving and whether changing land use management has resulted in reduced loading of nitrate in the vadose zone.
Cover Crop Groundwater Impact Study	The main geographic region for consideration is the Loup and Central Platte River Basins, more specifically, the area between the South Loup River and Wood River that has experienced groundwater declines. The study will include both irrigated and dryland cropped fields and span multiple years. Identification of landowners, mobilization, and installation of field equipment is scheduled this fall, with a final study report to be presented in March 2021.

3. **Contributes to water sustainability goals by increasing aquifer recharge, reducing aquifer depletion, or increasing streamflow;**

   List the following information that is applicable:

   - **The location, area and amount of recharge;**
   - **The location, area and amount that aquifer depletion will be reduced;**
   - **The reach, amount and timing of increased streamflow. Describe how the project will meet these objectives and what the source of the water is;**
   - **Provide a detailed listing of cross basin benefits, if any.**

   While aquifer recharge will be addressed as a part of this project, the specific location, area, and amount of recharge are factors that have not been calculated for the planning process. Further, the focus of this project is establishing a plan and protocols for monitoring water resources during periods of drought. This process will work to reduce aquifer depletion through proper and proactive management techniques. The Drought Management Plan will consider surface retention alternatives that will result in aquifer recharge. The Plan will also utilize these resources to retime water release to be most beneficial for the District. In addition, defining drought by utilizing local data will allow for more effective management of water use, leading to positive impacts on streamflow during low-flow periods. Because the CP NRD will be better able to monitor and manage water use, neighboring basins will benefit through a greater degree of available resources for downstream users.

4. **Contributes to multiple water supply goals, including, but not limited to, flood control, agricultural use, municipal and industrial uses, recreational benefits, wildlife habitat, conservation of water resources, and preservation of water resources;**

   - **List the goals the project provides benefits.**
   - **Describe how the project will provide these benefits**
   - **Provide a long range forecast of the expected benefits this project could have versus continuing on current path.**

   The goal of this project is to provide a proactive operational framework that identifies appropriate mitigation and response actions to minimize the occurrence of low-flow conditions in municipal water supplies across the CP NRD. Outcomes from the planning effort will be targeted at improving the reliability of water supplies through the District, as well as positively impacting neighboring basins. Benefits include more sustainable supplies of drinking water, and potentially reduced water treatment and administrative costs. In addition to the monetary benefits, this project will result in an operational framework that is environmentally beneficial. This project will seek to accomplish these goals

through the development of a Drought Management Plan that documents historic drought events and their impacts; identifies district-specific vulnerabilities and risks; includes a specific local definition for drought; outlines a local monitoring protocol; establishes mitigation alternatives; and creates a proactive, risk management-based response structure including triggers for actions.

Considering the climate trends that have been identified for the state of Nebraska in Understanding and Assessing Climate Change: Implications for Nebraska, it is probable that drought events will occur with increased frequency and have a more profound magnitude in the future. The report states "…the expectation is that drought frequency and severity in Nebraska will increase, particularly during the summer months because of the combination of increasing temperatures and increased seasonal variability…even if precipitation amounts remain the same or slightly increase in the future for Nebraska, already vulnerable water resources across the state will be stressed even further by these increased temperatures" (Bathke et al, 2014). An examination of population trends for the CP NRD shows that many jurisdictions are growing, with seven jurisdictions increasing population by more than 10 percent since the 2010 census. As the populations increase during the next several decades, it will be critical that water resources be monitored and protected for all users.

The Drought Management Plan will enable the CP NRD to better understand water supply, and thus, empower the CP NRD to make better informed management decisions. Another benefit of this project will be the robust community/stakeholder engagement that takes place as a part of this planning process. The CP NRD will conduct a regional drought tournament to examine current and potential management techniques to support the different stakeholders across the District. The drought tournament will bring together a wide spectrum of sectors (agriculture, industry, municipal, regulator, etc.) to better understand the management techniques currently in place and examine what other practices might be more beneficial. The drought tournament is based on a hypothetical scenario rooted in past drought experiences. The potential impacts of a multi-year drought event will be examined by tournament participants, encouraging partnerships between participants, stakeholders, and the CP NRD. The drought tournament format has been used several times across North America, with NRDs in Nebraska being the first to use it at the watershed level with the goal of developing better monitoring and management processes.

5. **Maximizes the beneficial use of Nebraska's water resources for the benefit of the state's residents;**

   - **Describe how the project will maximize the increased beneficial use of Nebraska's water resources.**
   - **Describe the beneficial uses that will be reduced, if any.**
   - **Describe how the project provides a beneficial impact to the state's residents.**

   This project will identify the most effective mitigation and response actions consistent with other District planning mechanisms. Importantly, this project will work to stabilize and ensure water supply resilience through droughts and maximize the water supplies available within the District. Water users across multiple sectors (agricultural, industrial, municipal, etc.) will directly benefit from this Drought Mitigation Plan. In addition to identifying drought mitigation alternatives and response protocols, this project will increase flows during periods of drought. These increased flows will likely protect habitat across the District, including for threatened and endangered species.

   No reductions in beneficial uses have been identified as part of this project. Adaptive water use, specific to periods of drought, will result from this project. Furthermore, a drought tournament will be used during this planning process to engage District stakeholders, connecting and building strong relationships. The drought tournament will bring together a wide spectrum of sectors (agriculture, industry, municipal, regulator, etc.) to better understand the management techniques currently in place and examine what other practices might be more beneficial. The drought tournament is based on a hypothetical scenario rooted in past drought experiences. The potential impacts of a multi-year drought event will be examined by tournament participants, encouraging important partnerships between participants, stakeholders, and the CP NRD. The drought tournament format has been used several times across North America, with NRDs in Nebraska being the first to use it at the watershed level with the goal of developing better monitoring and management processes.

   This project benefits state residents in many ways. The CP NRD has an population of 145,454 (US Census 2014 ACS estimate). This represents more than seven percent of the state's population. Many of the communities across the District have experienced population increases of the past several decades, with seven communities experience growth rates of greater than 10 percent over the past decade. As the population in these areas continue to increase, it is important to consider how best to manage water resources. Even beyond the boundaries of the CP NRD, this project extends its benefits. Not only for consumption and production, Nebraskan recreational activities are an important recipient of drought planning's more sustainable water supply. A major draw to the CP NRD is the annual migration of Sandhill cranes moving through the area. This migration is supported by thriving agricultural production, as well as water supply. Protection and management of water resources will do much to protect the native habitat for multiple species across the District.

Another major draw to the CP NRD is the annual Nebraska State Fair held in Grand Island. In 2016, more than 360,000 people visited the fair. It is critical that sufficient water resources be available for these types of events. The State Fair brings not only people, but also hundreds of animals - all of which depend on water throughout the duration of the fair. Therefore, in a variety of areas, planning for periods of insufficient supply positions the CP NRD not as crisis responders, but as risk managers, as outlined and recommended by research and publications provided by the National Drought Mitigation Center.

6. **Is cost-effective;**

- **List the estimated construction costs, O/M costs, land and water acquisition costs, alternative options, value of benefits gained.**
- **Compare these costs to other methods of achieving the same benefits.**
- **List the costs of the project.**
- **Describe how it is a cost effective project or alternative.**

The total anticipated cost of the project is $100,000. This fee does not include (or require) construction, O/M, or acquisition of land or water. The following table outlines the tasks to be completed as a part of this project, including a brief discussion of each task.

Task	Actions
Planning Review	Collect and analyze plans with drought components and management techniques, to include, but not limited to: IMP; Groundwater Management Plan; Long Range Implementation Plan; Hazard Mitigation Plan; and local/municipal Water Emergency Contingency Plans (each municipal water system).
Drought Tournament	The drought tournament will bring together a wide spectrum of sectors (agriculture, industry, municipal, regulator, etc.) to better understand the management techniques currently in place and examine what other practices might be more beneficial. The drought tournament is based on a hypothetical scenario rooted in past drought experiences. The potential impacts of a multi-year drought event will be examined by tournament participants, encouraging important partnerships between participants, stakeholders, and the CP NRD. The drought tournament format has been used several times across North America, with NRDs in Nebraska being the first to use it at the watershed level with the goal of developing better monitoring and management processes.
Analysis of Historic Record	Collect data from past drought events and analyze duration, intensity, and impacts. Data will be collected from the Palmer Drought Severity Index, Standard Precipitation Index, USGS stream gages, NRD well monitoring records, and other as available.

Develop Local Drought Thresholds	Using historic data, establish drought levels and criteria for action triggers. A local definition of drought will incorporate state, regional, and local data. The combination of data sources will provide the best local forecasting capability for the CP NRD and District stakeholders.
Develop a Protocol for Local Drought Monitoring and Forecasting	Create a public interface using the local drought definition to share important monitoring information. The drought monitor will be included on the existing CP NRD website upon completion. The public interface will be automated to collect and share data identified in the local drought definition. This will allow for local data to be incorporated into the monitoring and forecasting process.
Identify Drought Mitigation Alternatives	Assess the existing ability and current capacity to reduce risk to critical resources identifying mitigation goals and priorities.
Establish Response Protocols	Assess response alternatives and develop a gradual and graded response protocol.

The funds being requested will be used to develop a Drought Management Plan and local drought monitor. If this study is not funded through this grant, the alternatives will be to either: a) pursue funding of the project by utilizing local funds or, b) to not pursue the project. If a Drought Management Plan is not developed, based on information included in the Understanding and Assessing Climate Change: Implications for Nebraska, it is probable that drought events will occur with increased frequency and have a more profound negative impact in the future. The report states "…the expectation is that drought frequency and severity in Nebraska will increase, particularly during the summer months because of the combination of increasing temperatures and increased seasonal variability…even if precipitation amounts remain the same or slightly increase in the future for Nebraska, already vulnerable water resources across the state will be stressed even further by these increased temperatures" (Bathke et al, 2014). If efforts are not taken to proactively manage the risks that drought poses to the District, it will be more challenging to manage risk. This lack of preparation will result in reactive crisis response during future drought events.

This project is additionally beneficial because the development a local drought monitoring process will be used for years to come. The local drought monitor will be available to the CP NRD and District-wide stakeholders. The local drought monitor paired with the drought tournament will provide opportunities for robust stakeholder engagement and education. The CP NRD Drought Management Plan will also be able to shape other local drought planning efforts by cultivating data and information, and establishing a response protocol that will impact all sectors (agriculture, industry, municipal, etc.) for years into the future.

7. **Helps the state meet its obligations under interstate compacts, decrees, or other state contracts or agreements or federal law;**

- **Identify the interstate compact, decree, state contract or agreement or federal law.**
- **Describe how the project will help the state meet its obligations under compacts, decrees, state contracts or agreements or federal law.**
- **Describe current deficiencies and document how the project will reduce deficiencies.**

The Central Platte River is subject to the Platte River Recovery and Implementation Program (PRRIP). The program has three main elements.1) Increasing stream flows in the central Platte River during relevant time periods. 2) Enhancing, restoring, and protecting habitat lands for the target bird species. 3) Accommodating certain new water-related activities. The program is being implemented in an incremental manner, with the first increment covering the 13-year period from 2007 through 2019.

The overarching goal of the program is to utilize federal and state provided land, water, and scientific monitoring and research to secure defined benefits for the target species and their habitats in the central Platte River. The program will also provide Endangered Species Act (ESA) compliance for existing and certain new water-related activities in the Platte Basin upstream of the Loup River confluence for potential effects on the target species and reduce the likelihood of other species in the area being listed under the ESA. Further, the program will mitigate the adverse effects of certain new water-related activities through approved depletions plans. It is important that the program establish and maintain an organizational structure ensures appropriate state and federal government and stakeholder involvement. As during the Cooperative Agreement, the program is led by a Governance Committee (GC) consisting of representatives of Colorado, Wyoming, Nebraska, the Bureau of Reclamation, the Fish and Wildlife Service, South Platte River water users, North Platte River water users, Nebraska water users, and environmental groups. The program also establishes key standing advisory committees to assist the GC in program implementation. Those committees include the Technical Advisory Committee, the Land Advisory Committee, the Water Advisory Committee and the Finance Committee. In addition, an Adaptive Management Working Group (AMWG) has been formed to inform the GC on implementation of the program's Adaptive Management Plan.

With part of the goal of the PRRIP being improved stream flows during "relevant time periods," the Drought Management Plan will assist in meeting this goal by implementing improved management strategies aimed specifically at periods of drought and critical management periods.

The deficiencies that occur now are related to periods of drought and low-flow conditions throughout the District. When there is insufficient precipitation to facilitate recharge, District stakeholders (primarily agricultural and municipal) are concerned. Agricultural water supplies are critical to the economic health of the District and the state. When area crops and livestock are threatened, the economic impacts are felt within the District and beyond. In addition, periods of drought can interfere with ground water supplies. The interference with ground water supplies can impact municipal water systems in two ways. First, water table drawdowns have made municipal (and private drinking water) wells unproductive. The other impact is an increased concentration of chemicals in ground water supplies during drought events. As ground water resources are depleted, the remaining water has a higher concentration of chemicals which can render the remaining water supply unsafe for human consumption.

8. **Reduces threats to property damage or protects critical infrastructure that consists of the physical assets, systems, and networks vital to the state or the Untied States such that their incapacitation would have a debilitating effect on public security or public health and safety;**

- **Identify the property that the project is intended to reduce threats to.**
- **Describe and quantify reductions in threats to critical infrastructure provided by the project and how the infrastructure is vital to Nebraska or the United States.**
- **Identify the potential value of cost savings resulting from completion of the project.**
- **Describe the benefits for public security, public health and safety.**

Drought planning protects many critical and non-critical properties. While the impacts of drought are frequently non-structural, physical impacts can occur during periods of drought. For example, roadways and underground utilities are at an increased risk of damage during periods of drought due to soils and subbase materials shifting. This Drought Management Plan will identify strategies and actions to stabilize water supply during drought periods. An example of how regulator actions can reduce damages to roadways and underground utilities includes using water restrictions to limit outdoor irrigation. By using irrigation supplies more judiciously, water supplies should be available for a longer period of time. This prolonged availability of water will allow for better irrigation practices, thereby decreasing soil moisture depletion.

It is beyond the scope of this project to quantify the reduction of threats to critical infrastructure that will occur because of the plan. However, it is possible to define types of critical facilities that will be more secure when the plan is in place. Examples of critical facilities that will benefit from this project include, but are not limited to: underground utilities, roadways/highways, wells (municipal and agricultural), and basements/foundations. This list includes physical systems that

enjoy reduced risks because of having a drought plan in place, but there are also natural systems that benefit from drought management planning. An example of this would be urban canopies. Urban trees are often overlooked in their importance to a community. Trees and green spaces increase community aesthetics, and create a welcoming environment. Urban trees help to entice potential residents to move to an area and retain the existing population.

Starting in 2011, the state of Texas experienced large and severe drought events. During this two-year drought, the state lost millions of trees. Urban areas experienced the greatest impacts. Urban tree cover helps reduce the "heat island," slow stormwater run-off, increase soil permeability, and stabilize stream and river banks. So, while trees are not considered critical facilities, a healthy canopy contributes to public health and happiness, and directly benefits critical facilities and natural systems.

Drought planning creates more secure communities that can better withstand drought periods. The United States has been fortunate in that it has not experienced a prolonged drought event; but there are examples from across the world of increased instability and violence during periods of intense drought. In 2017, a drought in India resulted in rioting in the streets of New Delhi, burning dozens of buses, multiple conflicts between citizens/farmers and police, and general civil unrest. Not only can violence spike, but research has noted an increase in suicide risks during prolonged drought events. A 2012 study examined drought and suicide statistics for the state of New South Wales (Australia) between 1970 and 2007. The study found that rural men ages 30 to 49 exhibited a 15 percent increase in suicide risk coinciding with longer and longer periods of drought (Hanigan et al 2012 http://www.pnas.org/content/109/35/13950). By planning for drought and identifying ways to mitigate drought impacts, the CP NRD can guard against this kind of instability and violence occurring when a prolonged drought event impacts the District.

9. Improves water quality;

- **Describe what quality issue(s) is/are to be improved.**
- **Describe and quantify how the project improves water quality, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.**
- **Describe other possible solutions to remedy this issue.**
- **Describe the history of the water quality issue including previous attempts to remedy the problem and the results obtained.**

Agriculture is the dominant land use in central Nebraska; and agricultural practices affects the quality and quantity of water resources. Nitrate levels that exceed the ideal limit for potable water have historically impacted the CP NRD, especially in the eastern portion of the District. Some municipal water suppliers along the Platte Valley are concerned with the infiltration of herbicides and other surface-water contaminants, particularly in shallow alluvial ground water. During periods of drought, this contamination is intensified.

One of the goals of the Drought Management Plan is to create a framework that supports a sustainable and improved water supply for all water users across the District. Critical to this process is the establishment of local data to define drought so a drought response protocol can be developed. Also vital will be determining what monitoring tools can identify drought early, and enable local officials to implement the most appropriate controls.

Other solutions to address insufficient water supply and/or groundwater contamination include: increased surface retention of water supplies; decreased chemical applications; adapted agricultural practices to reduce run-off; and water filtration systems in municipal water supplies. The CP NRD is currently working with agricultural producers through the Chemigation program and the Vadose Zone Nitrate Study to address these issues. Some programs, like municipal well filtration are extremely costly. The Drought Management Plan will make other ongoing efforts more effective in the long-term and will reduce the necessity of costly physical projects. A key benefit to the Drought Management Plan is the ability to positively impact all lands and residents across the District. Water management policies and improved monitoring will positively impact all municipal water providers, achieving a broad-based effect.

10. Has utilized all available funding resources of the local jurisdiction to support the program, project, or activity;

- **Identify the local jurisdiction that supports the project.**
- **List current property tax levy, valuations, or other sources of revenue for the sponsoring entity.**
- **List other funding sources for the project.**

The CP NRD is the lead agency associated with this project. Stakeholders from across the District and various sectors (agriculture, industry, municipal) will be invited to engage in the planning process. The project will include a drought tournament. The potential impacts of a multi-year drought event will be examined by tournament participants, encouraging important partnerships between participants, stakeholders, and the CP NRD. The drought tournament format has been used several times across North America, with NRDs in Nebraska being the first to use it at the watershed level with the goal of developing better monitoring and management processes.

The CP NRD is funded through a property tax levy, the current levy is 0.03582¢ per $100 valuation. The CP NRD has established within its proposed budget for FY 2017/2018 a financial commitment to support this project (Attachment 3). The cost of $100,000 will be divided between funds requested through the Water Sustainability Fund (60 percent) and the CP NRD local budget (40 percent). See Attachment 1 for the CP NRD's letter of financial commitment. Appendix A will provide a project budget summary.

11. Has a local jurisdiction with plans in place that support sustainable water use;

- **List the local jurisdiction and identify specific plans being referenced that are in place to support sustainable water use.**
- **Provide the history of work completed to achieve the goals of these plans.**
- **List which goals and objectives this project will provide benefits for and how this project supports or contributes to those plans.**
- **Describe and quantify how the project supports sustainable water use, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.**
- **List all stakeholders involved in project.**
- **Identify who benefits from this project.**

The CP NRD, as a local jurisdiction, has developed multiple plans aimed at supporting sustainable water use. The following tables provide information regarding local planning mechanisms. These plans cover the entire District with a population impacted of 145,454 (US Census 2014 ACS estimate). This project will support sustainable water use by building on previous efforts and enhancing data collection, developing, forecasting and monitoring tools, and establishing a robust planning and operations framework to proactively manage water resources and support drought preparedness.

The CP NRD as well as agricultural producers, industrial water users, and municipal water system operators are stakeholders that will be engaged in this process. The drought tournament will be used for community/stakeholder development.

	Focus Area	Goal	Objective
CP NRD Mater Plan 2011 - 2021	Soil Conservation and Erosion Control	To use each acre within its capability and to treat each acre according to its needs as set forth in the technical guidelines adopted by the District.	To establish approved cultural management practices, vegetative practices or structural measures, as needed on all lands to prevent wind and water erosion.
			To apply irrigation water management techniques to all the irrigated land to properly conserve and efficiently utilize soil, water, fertility and energy.
			To develop proper range and pasture use and management plans or programs to properly conserve and efficiently utilize those range and pasture areas.
	Water Quality	To protect and enhance the quality of surface and groundwater within the District.	To maintain groundwater nitrate levels at or below the permitted levels in areas that are less than 10 ppm.
	Water Quantity	To assure an adequate supply of water for feasible and beneficial uses, through the proper management, conservation, development and utilization of the District's water resources.	To establish irrigation management practices and techniques on the irrigated lands in order to properly conserve and efficiently utilize the water.
			To develop plans and programs that will strive for a balance between water use and water availability.
			To develop plans and programs that will strive for a balance between the rights of all individuals utilizing the groundwater aquifer.
			To work toward balancing the needs of wildlife with needs of people in utilization of the water resources in the District.
			To balance the needs of endangered and other species on the Platte River and its tributaries with the needs and rights of human users.
	Fish and Wildlife Habitat	The conservation and enhancement of fish and wildlife resources for the benefit of the people.	Maintain wetlands for wildlife habitat.
			Consider potential damage to or potential for enhancement of, fish and wildlife habitat in the evaluation of District projects.

	Forestry Management	To develop and manage trees/shrubs for the production of raw material for wood products; to reduce wind velocities; to conserve moisture; and to reduce wind erosion for the comfort of the people, livestock and wildlife; and for environmental recreation and aesthetic benefits.	To establish approved cultural management practices, vegetative practices or structural improvements.
	Pollution Control and Solid Waste Disposal	To protect and enhance the quality of land, air, surface water and groundwater within the District.	To establish irrigation water management techniques on all irrigated land to properly conserve and efficiently utilize soil, water and fertility.
			To protect and preserve the quality of ground and surface waters that presently meet acceptable standards as adopted by the US Public Health Service and the Nebraska Department of Environmental Quality.
			To improve the quality of groundwater and surface water not presently meeting the standard to such a level as to at least meet water quality criteria contained in the standards.
	Information and Education	That the public will develop a connection with natural resources conservation and management through accurate knowledge and understanding of the District's objectives.	Establish and implement information and education programs for the public about NRD's duties, responsibilities and objectives.
			Promote communications program designed to enhance the knowledge and understanding of the District's directors and staff about the priorities and expectations of the citizens of the District.
			Study/Improve drinking water supply.
			Reduce water demand/improve drought education.

Integrated Water Management Plan, 2009	Goal	Objective
	To secure any future water supply project that are shown to be feasible, beneficial and desirable.	Develop adequate regulations to protect the rights of all legal existing users, ensuring that mandatory requirements will treat parties equitably in both the fully and the over appropriated areas of the District.
	To provide for a total consumption of water that does not exceed a fully appropriated status.	Develop rules and regulations, and programs that will strive for a balance between water use and availability.
	To maintain for present and future generations the District's water resources while promoting programs that allow economic growth.	Promote water use efficiency when hydrologically and economically beneficial to domestic, agricultural, and industrial water users.
	To provide, for present and future generations, an adequate supply of quality water for feasible and beneficial uses.	Promote and support wherever economically feasible, programs that reduce water consumption by invasive species.
	To minimize and/or resolve conflicts between water users.	Identify and implement potential incentive programs, education programs, and funding sources (state, federal, other) that help encourage water conservation, reduce consumptive use, meet other management goals and objects, and develop a plan to maximize funding from available sources.
	To ensure that the plan complies with the law and with interstate agreements, and to meet basin-wide goals.	

Central Platte NRD Multi-Jurisdictional Hazard Mitigation Plan, 2017	
Goal	Objective
Protect Public Health and Safety from Natural Hazard Events	Improve Warning Systems
	Improve Emergency Communication Systems

CP NRD Completed Project	
Annual review and update of Groundwater Management Plan	In 2017 the CP NRD is proposing to update water regulations. The changes to the rules and regulations maintain consistency between the local and state regulations.
Annual groundwater monitoring	Currently the CP NRD collects groundwater measurements two times annually. The measurements are taken in all 11 counties served by the NRD to monitor the District's groundwater levels.
Platte River Recovery Implantation Program	CPNRD participates in the Platte River Recovery Implementation Program (PRRIP) with the states of Nebraska, Colorado, Wyoming and the Department of Interior to find a solution for endangered species in the Central Platte Basin; as well as water rights for the landowners/operators in the District. PRRIP was developed by the federal government along with the basin states of Nebraska, Colorado and Wyoming and signed in 2006. Local, state and federal government agencies are working with groups from throughout the basin to build a framework for a long-term Program that will satisfy Endangered Species Act (ESA) requirements for water users in the basin.
Groundwater Exchange Program	The Groundwater Exchange Rules & Regulations was updated in September 2016 to expand the Program to include the Loup Basin within the District and add definition of terms.
Vadose Zone Nitrate Study	As part of this three-year vadose zone study, approximately 27 sites collected across the CPNRD between 1990 and 1996 have been digitized and are being used to compare recent profiles at these sites to determine how fast nitrate is moving and whether changing land use management has resulted in reduced loading of nitrate in the vadose zone.
Cover Crop Groundwater Impact Study	The main geographic region for consideration is the Loup and Central Platte River Basins, more specifically, the area between the South Loup River and Wood River that has experienced groundwater declines. The study will include both irrigated and dryland cropped fields and span multiple years. Identification of landowners, mobilization, and installation of field equipment is scheduled this fall, with a final study report to be presented in March 2021.

Other completed/ongoing projects which will support the Drought Management Plan are provided in the following discussion.

CPNRD Groundwater Quality Program: Nebraska Legislation gives responsibilities to NRDs for all forms of pollution. While all forms of pollution are a concern, the problem of high nitrates will remain a priority for the District during this planning period. CPNRD has 21,002 registered irrigation wells. Nearly 800 producers participate in the Groundwater Quality Management Program. The Program's goal is to lower average nitrate levels district-wide. When the Program started, average nitrate levels in the District were 19.24 parts per million (ppm.) Levels have been lowered through management efforts by landowners; however, the board realizes how much work remains and the years that must pass before the problem is solved. The District continues to work with farmers, agriculture business operators, and the public to further reduce high nitrates in groundwater.

Groundwater Pollution: The chief source of groundwater pollution in the District is nitrate-nitrogen. The U.S. Environmental Protection Agency's Maximum Contaminant Level (MCL) for nitrate-nitrogen is 10 milligrams per liter, or 10 parts per million (ppm). High nitrates are a problem in varying degrees throughout much of the District. In the western portion of the NRD, concentrations of sulfate are not uncommon. High iron and magnesium levels, along with high total dissolved solids in many areas, have the potential for considerable problems in municipal supplies, particularly in areas where large quantities of water are used for industrial purposes. Some chemical concentrations in the groundwater can be stabilized, either by preventing the chemical from becoming sufficiently prevalent to cause a problem or by preventing the chemical from leaching into the groundwater. The NRD's Nitrogen Management Program was adopted in response to increasing high concentrations in large areas of nitrate-nitrogen in the groundwater and vadose zones (areas between the root zone and the top of the water table).

Management Program: The Groundwater Quality Management Program is having a beneficial impact on the nitrate levels in groundwater by undertaking a long-term solution for the District's widespread high groundwater nitrate-nitrogen problems. Until the Program was adopted, the nitrate level in the high nitrate Area of the district had increased at a rate of about 0.5 ppm per year to 19.24 ppm. High groundwater nitrates in some areas of the valley were first identified in 1961. Excessively high nitrates can lead to methemoglobinemia, a condition known as "blue baby syndrome." High nitrates also are a potential hazard to livestock. Scientific studies have shown that commercial nitrogen fertilizer is the primary cause (though not the only cause) in the Central Platte Valley for high nitrates in groundwater. Many of those affected by the high nitrates in the drinking water are farmers and their families. Numerous meetings with farmers, crop consultants, fertilizer industry representatives and others were conducted to determine how best to implement solutions that were suggested by the research. Hearings to obtain public input were also conducted.

Online Reporting Form: In August 2015, the CP NRD board approved a contract with GIS Workshop in the amount of $64,500 to develop a new system for producers to fill out their annual Groundwater Management forms online. Upon logging in, producers use their User ID and may log in throughout the year to record their water and soil test results, and their actual yields prior to submitting the form. Producers benefit by having all past information in one location. The system significantly reduces the amount of administrative time it takes the NRD staff to manually enter the 6,000-7,000 forms submitted each year, and will streamline the process of generating letters and reports. Meetings were held across the District to update producers and demonstrate how to use the new online form.

Central Platte Demonstration Projects: Practices that impede nitrogen fertilizer from leaching into the aquifer have been successfully demonstrated throughout the District. Farmers from throughout the District with varying soils and conditions were recruited to work with the CP NRD in using the best management practices to demonstrate that nitrates can be managed efficiently and effectively while maintaining crop yields. As farmers began using the new tools, word of mouth spread the story of their effectiveness. As new technology develops to help farmers practice better management, the District's board modifies cost share programs to accommodate new tools. Initially, emphasis was given to reducing the commercial fertilizer input by counting the contribution from residual sources. However, the leaching problem has two components: fertilizer and water. Reductions in the amounts of applied water normally produce less leaching than just reduction of fertilizer inputs. The board decided to make the practice of monitoring well outputs mandatory in Phase II and Phase III, because research indicated that most farmers did not know how much water they were using during irrigation.

The Nitrogen and Irrigation Management Demonstration Project is one of the longest-existing demonstration projects in Nebraska and possibly the nation. Other state and national demonstration projects have been modeled after this educational effort that has been conducted in cooperation with the CP NRD. The Project was initiated in 1984 following the Hall County Water Quality Special Project. The primary financial supporter for the project has been the CP NRD with grants exceeding $1.3 million since its initiation. The Platte Valley Project includes parts of 11 counties in the central Platte Valley which includes the entire area of the CP NRD. Within these boundaries there are areas with groundwater nitrate-nitrogen concentrations in excess of 40 ppm, which are among the highest in Nebraska. Due to a combination of coarse-textured soil, shallow groundwater, intense irrigation and over application of nitrogen on acres in corn production; nitrate contamination exists in a large portion of the NRD.

With areas of the CP NRD exceeding the 10 ppm set by the EPA, the CP NRD was required to develop a groundwater management plan to address groundwater quality. In 1988, State of Nebraska requirements forced the CP NRD to develop regulations involving nitrogen application. This plan has addressed the contamination problem using a phased system based on the average nitrate-nitrogen found within the CP NRD.

Over 400 demonstration sites have been located on producers' cornfields in the project area. Randomized replicated levels of nitrogen application have been placed on most of these locations, usually in increments of 50 lbs. above and 50 lbs. below the calculated nitrogen recommendation, based on the University of Nebraska's algorithm. These plot locations have provided a point of focus for over 290 field days and winter meetings. Results from these field length, producer applied, and producer harvested plots have been instrumental in the adoption of water quality practices by the producers of the CP NRD. Producer survey results taken in 1997 showed that 54% of producers responding tested irrigation water for nitrates, 34% used a nitrification inhibitor and 70% attended a tour or meeting on best management practices to protect water quality.

The project emphasis has changed over the years, as new technology become available to the agricultural sector. Evaluation and demonstration of these technologies are incorporated within the activities of the project. Some of these technologies include use of ET Gage, watermark sensors for scheduling irrigation, soil moisture capacitance probes, application of a polymer material to an irrigated field to evaluate its effects on leaching of nitrate-nitrogen, evaluation and demonstration of slow-release or controlled release nitrogen fertilizer products, and nitrogen fixation using cover crops in seed corn. Extension and demonstration efforts in areas of irrigation management have also been a part of the project. Efforts such as a demonstration surge trailer have been influential in the adoption of more efficient ways of irrigation.

Crop Irrigation & Demand Network: The goal of the project is being accomplished by measuring pumped water and precipitation at selected locations to provide data to develop irrigation efficiencies by irrigation equipment type, soil water holding capacities, and crop type. This advanced program was initiated through the NRD in 2013 with $60,000 budgeted for the project and expanded by a $750,000 NDNR grant in 2014. There have been 77 sites established across the NRD; with 11 sites in 2013, 30 sites in 2014; and 36 sites in 2015. The project's goal was to monitor different types of irrigation systems. Currently, there are 52 pivots, 18 gravity and 7 sites. Water pumped, system pressure and rainfall are monitored at all locations, with soil moisture monitored at 30 locations. Partners include DNR, UNL Extension, Seim Ag Technology, CPNRD and McCrometer.

12. Addresses a statewide problem or issue;

- **List the issues or problems addressed by the project and why they should be considered statewide.**
- **Describe how the project will address each issue and/or problem.**
- **Describe the total number of people and/or total number of acres that would receive benefits.**
- **Identify the benefit, to the state, this project would provide.**

Drought is an issue that extends beyond the CP NRD borders, the state of Nebraska, and the United States. Drought can negatively impact water supplies vital for agricultural production, industrial users, and municipal water supplies. The cascading impacts that result from prolonged drought events include economic depressions/recession, degradation of lands and streams, population declines, increased risk of suicide, increased potential for wildfires, intensification of flooding events, and stormwater run-off.

While only seven percent of the state's population live in the CP NRD, agricultural producers across the District contribute significantly to the state's economic wellbeing. Buffalo, Dawson, Hall, and Merrick Counties alone contribute more than $1.84B to the state economy according to the 2012 Agricultura Census. If agricultural production were to be negatively impacted by a drought, the ripple effects would be felt across the state and likely beyond.

Developing a drought management plan enables local authorities to proactively examine vulnerabilities and determine a reasonable and realistic course of action to address threats and risks. Key benefits to this project are the Drought Plan, drought definition, and monitoring protocol and information that will be made available to agricultural producers (and other stakeholders) to empower them to make informed decisions. Using local information and data to define drought will allow stakeholders to better understand local conditions and will provide a historical context for current conditions.

The agricultural vulnerabilities are not the only issues that the Drought Management Plan will address. A drought management plan is one tool that can be used to combat the social impacts that result from drought events. By proactively establishing drought response protocols, members of the community are better able to predict what actions will be taken, reducing anxiety and unpredictability.

Finally, one key outcome from the Drought Management Plan is providing stability and sustainability for the local water supply. By utilizing a risk management approach, the CP NRD ensures sufficient water supply to address the secondary hazards, like wildfire, that increase in probability during periods of drought.

13. **Contributes to the state's ability to leverage state dollars with local or federal government partners or other partners to maximize the use of its resources;**

- **List other funding sources or other partners, and the amount each will contribute, in a funding matrix.**
- **Describe how each source of funding is made available if the project is funded.**
- **Provide a copy or evidence of each commitment, for each separate source, of match dollars and funding partners.**
- **Describe how you will proceed if other funding sources do not come through.**

Funding sources for this project include local funds provided by the CP NRD and a Water Sustainability Fund grant request. The CP NRD is committed to paying 40 percent of the project costs. Letters of financial commitment are included in the Appendix of this application. There are no other sources of funding for the project. A copy of the budget is available in Appendix A: Project Budget Summary.

14. **Contributes to watershed health and function;**

- **Describe how the project will contribute to watershed health and function in detail and list all of the watersheds affected.**

This project will strive to enhance watershed health and function through identification of mitigation and responsive actions that can be utilized by the CP NRD to reduced drought-associated risks. These efforts, while aimed at ensuring adequate recharge for District water use, would be expected to enhance low-flow streamflows at a time when watershed health and function is under the most stress. Further, these efforts provide for increased watershed function. This occurs by maintaining connectivity of waterways, while providing support for species and habitat in the affected watershed.

15. **Uses objectives described in the annual report and plan of work for the state water planning and review process issued by the department.**

- **Identify the date of the Annual Report utilized.**
- **List any and all objectives of the Annual Report intended to be met by the project**
- **Explain how the project meets each objective.**

The Annual Report and Plan of Work for the Nebraska State Water Planning and Review Process dated September 2015 was used for this effort.

(http://nebraskalegislature.gov/FloorDocs/104/PDF/Agencies/Natural_Resources__Department_of/4_20151014-110813.pdf). The objectives of the Annual Report that will be met by the project focus on the goals and objectives of the Integrated Management Plan. The development and implementation of the IMP is a significant part of the DNR's objectives for the Upper Platter River Basin. Consistent with the state's work plan, the IMP identifies the need to provide, for present and future generations, an adequate supply of quality water for feasible and beneficial uses. That is consistent with the goals of the Drought Management Plan.

Develop water management plans: Specific to the state work plan, the Drought Management Plan will reinforce the need to develop water management plans. The response protocols identified as a part of the Drought Management Plan will outline how water resources can be utilized during periods of vulnerability. This will cover both hydrologically-connected areas and areas without a hydrological connection.

Interagency coordination: The Drought Management Plan will also include a stakeholder engagement process in the form of the drought tournament. The drought tournament will bring together a wide spectrum of stakeholders to facilitate interagency coordination. Invited participants include federal agencies (i.e. USDA, USGS, etc.), state agencies (NDNR, NEMA, NDOT, etc.) and local authorities (elected officials, water system operators, etc.) to better understand the management techniques currently in place and examine other, potentially more beneficial practices. The drought tournament is based on a hypothetical scenario rooted in past drought experiences. The potential impacts of a multi-year drought event will be examined by tournament participants, encouraging important partnerships between participants, stakeholders, and the CP NRD. The drought tournament format has been used several times across North America, with NRDs in Nebraska being the first to use it at the watershed level with the goal of developing better monitoring and management processes.

Data acquisition: Data collection and analysis will be a large component of the planning process which is consistent with the state work plan. The Drought Management Plan will utilize data from stream gages, monitoring wells, and many other sources. This local data will be used to define drought in the most local terms possible. To establish a drought definition, data from historic drought years will be analyzed to draw correlations between national data sets and more local data. The utility of having a local drought definition is early onset of drought can be identified sooner, enabling more proactive management techniques.

Mitigation: A focus of the Drought Management Plan will be to identify opportunities to mitigate potential impacts from future drought events. Mitigation alternatives may include, but are not limited to: surface retention of stormwater run-off (drought and flood mitigation); retiming of release; streambank stabilization; use of native planning materials; and others.

16. **Federal Mandate Bonus. If you believe that your project is designed to meet the requirements of a federal mandate which furthers the goals of the WSF, then:**

- **Describe the federal mandate.**
- **Provide documentary evidence of the federal mandate.**
- **Describe how the project meets the requirements of the federal mandate.**
- **Describe the relationship between the federal mandate and how the project furthers the goals of water sustainability.**

National Response Framework: This project is will help the CP NRD meet the goals set forth in the National Response Framework (https://www.fema.gov/media-library-data/1466014682982-9bcf8245ba4c60c120aa915abe74e15d/National_Response_Framework3rd.pdf). The National Response Framework: Third Edition was published in June of 2016 and focus on ensuring the Nation can respond effectively to all types of incidents. The priorities of the Response mission area are to save lives, protect property and the environment, stabilize the incident, and provide for basic human needs. The following principals form the fundamental doctrine for the Response mission area: engaged partnerships; tiered response; scalable, flexible, and adaptable operational capabilities; unity of effort; and readiness to act.

Clean Water Act: The Drought Management Plan will also contribute meeting the objectives outlined in the Clean Water Act. The Clean Water act and its amendments have as their objective the restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters. Section 401 requires that Federally permitted activities comply with the Clean Water Act standards, State water quality laws, and other laws as appropriate. The Drought Management Plan will be a tool in developing a sustainable and resilient water supply for the District, a stable water supply during periods of drought will provide direct benefits to the integrity District. (https://www.epa.gov/cwa-404/clean-water-act-section-401-certification)

Endangered Species Act: The US Congress passed the Endangered Species Act (ESA) in 1973 with the goal of preserving the rich natural heritage of the "esthetic, ecological, educational, recreational, and scientific value to our Nation and its people." The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which the depend. This objective is consistent with the goals and objectives of the Drought Management Plan. The Drought Management Plan will lead to the preservation of ecosystems disrupted by periods of drought. The CP NRD is home to a wide range of endangered and threatened species including, but not limited to: Interior Least Tern, Piping Plover, Whooping Crane, River Otter, American Burying Beetle, and Western Prairie Fringed Orchid.

Section D.

PROJECT DESCRIPTION

1. Overview

In 1,000 characters *or less*, provide a brief description of your project including the nature and purpose of the project and objectives of the project.

The CP NRD is leading the effort to develop a proactive Drought Management Plan for the District. The Plan will focus on defining drought in local terms. This local definition of drought will be used to establish a drought monitoring protocol which will include specific trigger and actions to taken during periods of drought. The goal of this process is to develop a tool that will be effective in identifying the early onset of drought events and empowering more proactive decisions and management techniques. The outcome of the project will be a more sustainable and stable water supply for all uses across the District.

The project will include the development of a drought monitoring tool that will be made available to District-wide stakeholders via the CP NRD website. The local drought monitor will utilize the local drought indicators established during this project. The drought monitor will be based on data collected during historical drought events and will incorporate more recently developed local data.

The planning process will work to include a range of stakeholders to better understand both current management practices, as well as how these practices can be improved. Strong, cooperative engagement will occur during a regional drought tournament. The drought tournament will bring together a wide spectrum of stakeholders to facilitate interagency coordination. Invited participants include federal agencies (i.e. USDA, USGS, etc.), state agencies (NDNR, NEMA, NDOT, etc.), and local authorities (elected officials, water system operators, etc.) to better understand the management techniques currently in place and examine what other practices might be more beneficial. The drought tournament is based on a hypothetical scenario rooted in past drought experiences. The potential impacts of a multi-year drought event will be examined by tournament participants, encouraging important partnerships between participants, stakeholders, and the CP NRD. The drought tournament format has been used several times across North America, with NRDs in Nebraska being the first to use it at the watershed level with the goal of developing better monitoring and management processes.

2. Project Tasks and Timeline

Identify what activities will be conducted by the project. For multiyear projects please list what activities are to be completed each year.

It is expected that a one year schedule would be sufficient to complete the scope of work outlined for this project. The schedule presented projects a March 2018 project kick-off. Any adjustments required due to grant award will be reflected in the project schedule. Grant reporting will be ongoing throughout the project duration.

Task	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19
Project Administration													
Planning Review													
Analysis of Historic Record													
Drought Tournament													
Develop Local Drought Thresholds													
Develop a Protocol Monitoring/Forecasting													
Establish Response Protocols													
Identify Mitigation Alternatives													

3. Partnerships

Identify the roles and responsibilities of agencies and groups involved in the proposed project regardless of whether each is an additional funding source. List any other sources of funding that have been approached for project support and that have officially turned you down. Attach the rejection letter.

The Drought Management Plan will include a stakeholder engagement process in the form of the drought tournament. The drought tournament will bring together a broad spectrum of stakeholders to facilitate interagency coordination. Invited participants include federal agencies (i.e. USDA, USGS, etc.), state agencies (NDNR, NEMA, NDOT, etc.), and local authorities (elected officials, water system operators, etc.) to better understand the management techniques currently in place and examine what other practices might be more beneficial. The drought tournament

is based on a hypothetical scenario rooted in past drought experiences. The potential impacts of a multi-year drought event will be examined by tournament participants, encouraging important partnerships between participants, stakeholders, and the CP NRD. The drought tournament format has been used several times across North America, with NRDs in Nebraska being the first to use it at the watershed level with the goal of developing better monitoring and management processes.

While there will be a significant stakeholder engagement component, the CP NRD will provide the required local cash match for the project. (See Attachment 1).

4. Other Sources of Funding

Identify the costs of the entire project, what costs each other source of funding will be applied to, and whether each of these other sources of funding is confirmed. If not, please identify those entities and list the date when confirmation is expected. Explain how you will implement the project if these sources are not obtained.

Funding sources for this project include local funds provided by the CP NRD and a Water Sustainability Fund grant request. The CP NRD is committed to paying 40 percent of the project costs. A letter of financial commitment from the CP NRD is included in Appendix A of this proposal. There are no other sources of funding for the project. A copy of the budget is available in Appendix A: Project Budget Summary.

If the project does not receive funding assistance through the Water Sustainability Fund the CP NRD will consider other funding alternatives, including local project funding, or not beginning the project.

5. Support/Opposition

Discuss both support and opposition to the project, including the group or interest each represents.

There is no known opposition to this project. However, the CP NRD acknowledges that it will be important during the planning process to consider the positions of the various stakeholders. Stakeholder engagement around the topic drought can be contentious between agricultural water users, industrial water users, and municipal water systems. The drought tournament is an effective tool at reducing these silos through cross-sector education and relationship building.

There is strong support for this drought planning effort. The CP NRD has secured written letters of support from the Hamilton County Emergency Management Director, Hall County Emergency Management Director, Dawson County Emergency Management Director, and the Region 44 Emergency Manager (See Attachment 2).

Furthermore, in the past, the State Mitigation Officer (Nebraska Emergency Management Agency) offered support for drought planning and in particular the drought tournament. Federal agencies have also offered statements of support local drought planning. More specifically, FEMA region VII, the EPA, and the USDA have all made statements supporting local drought planning efforts.

Appendix A: Project Budget Summary

Task	Total Cost
Project Administration	$5,000
Planning Review	$7,500
Analysis of Historic Record	$7,500
Drought Tournament	$15,000
Develop Local Drought Thresholds	$10,000
Develop a Protocol Monitoring/ Forecasting	$40,000
Establish Response Protocols	$7,500
Identify Mitigation Alternatives	$7,500
Total	$100,000